# Fishery, Habitat, and Recreational Use Surveys For the Kankakee River, Indiana

(Final Report – Workplans # 200766, #202766)

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# Kankakee River Fish Community and Habitat Survey

## Introduction

The Kankakee River Basin drains a total of 3,125 square miles of northwest Indiana. Of this total, 1,763 square miles drain directly into the Kankakee, 427 square miles into the Yellow River, and 935 square miles into the Iroquois River. The river originates near South Bend, Indiana and flows in a southwesterly direction through St. Joseph, LaPorte, Starke, Porter, Jasper, Lake, and Newton counties before entering Illinois. The Kankakee River is considered a major source of recreational opportunities, including fishing, for many area residents. Most of the basin has been extensively drained. By 1925, drainage was virtually complete and the 500,000-acre Grand Marsh, once the center of a rich fish and wildlife resource, was gone. The "natural" Kankakee had been replaced by a series of ditches, which in places stretch so straight that from the deck of a boat, the channel continues out of sight in either direction. The main branch of the river lacks pools and riffles. It is a continuous glide having the current and flow similar to a canal. A number of bayous are found along the river. Some remain connected to the river throughout the year while others are connected only during high water or not at all. Fish and Wildlife figures indicate that of the 1,200 miles of stream presently comprising the Kankakee and its minor tributaries, only 16 miles remain in the natural state (Robertson 1972).

The Division of Fish and Wildlife (DFW) first surveyed the Kankakee watershed in 1971. Forty stations were sampled, 26 stations with rotenone and 14 stations by AC electrofishing. More than 14,600 fish weighing a total of 1,477 pounds were examined. Seventy-five species representing 14 families were identified (Robertson 1972). A second survey conduction in 1981 sampled fish at 13 main branch river stations and two bayous. DC electrofishing was used to collect fish. Only game fish were collected from the main channel while all fish were collected from the two bayou stations. Slightly over 2,000 fish were examined representing 48 species from 13 families (Robertson and Ledet 1981).

In 1986 a grant from the DFW nongame program financed another fishery investigation of the distribution of fishes in the Kankakee River Basin within Indiana. Seining collections at 89 stations resulted in the identification of 67 species (Seegert 1987). In general, the 1986 survey found the occurrence and abundance of fish to be comparable to seining collections by Gerking conducted in 1940-1943 (Gerking 1945).

Seegert reviewed several prior Kankakee fish collections and concluded that five previously identified species should be considered as extirpated from the watershed and six species listed in Robertson's 1971 survey were probably misidentified. He concluded that the Kankakee basin in Indiana contained at least 77 species in 1985 (Seegert 1987).

The Illinois Department of Natural Resources (ILDNR) began a walleye stocking program on the Kankakee River in 2000. More than a quarter million walleye fingerlings and a half million fry were stocked into Illinois waters of the Kankakee in 2000, 2001, and 2003. All of theses fish were reared by ILDNR's hatchery system and were produced from Kankakee River broodstock.

The present study has three objectives:

1. Determine the species composition and relative abundance of fishes in the Kankakee River with special emphasis on species of recreational value.
2. Measure fish harvest and other recreational uses on the Kankakee River.
3. Determine if supplemental stocking of walleye can improve fishing quality.

This report summarizes the results of fish and habitat sampling conducted in 2001, the angler creel survey conducted in 2002, and the fall 2002-04 game fish samples recommended in the 2001 progress report.

## Methods

Work in 2001 consisted of a summer survey of 13 mainstem stations and two bayous conducted between July 16 and August 1 (Table 1). These stations were sampled using a boat mounted DC electrofishing unit. Each station was electrofished for one hour and all fish collected by two dippers were identified, measured, weighed, and released back into the river. Scale samples were taken from game fish to determine age and growth.

Table 1. Main channel stations and bayous by station number and river mile. Upstream latitude and longitude coordinates are given for each site along with map description, sample date, and QHEI score when available.

| Station Number | River Mile | Sample Date/s | QH EI | County | USGS Quad | Township | Range | Section | Latitude (N) | Longitude (W) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 57.30 | 7/31, 10/10 | 49 | Lake | Illiana Heights | 31N | 9W,10W | 6, 1 | 41.16825 | 87.50094 |
| 2 | 60.32 | 8/1, 10/10 | 49 | Newton | Schneider | 31N | 9W | 4, 5 | 41.17049 | 87.47517 |
| 3 | 63.29 | 7/16 | NA | Lake | Schneider | 31N | 9W | 1 | 41.16213 | 87.41459 |
| 4 | 69.58 | 7/24, 10/11 | 43 | Lake | Shelby | 32N | 8W | 26, 27, 34 | 41.19551 | 87.31203 |
| 5 | 74.40 | 7/26 | NA | Lake | Demotte | 32N | 7W | 9 | 41.23582 | 87.22583 |
| 6 | 79.75 | 7/30,10/3 | 50 | Newton | Hebron | 33N | 6W | 29, 30 | 41.27743 | 87.15582 |
| 7 | 85.94 | 7/19,10/2 | 47 | Porter | Kouts | 33N, 32N | 6W, 5W | 31, 36, 6 | 41.26120 | 87.04549 |
| 8 | 89.52 | 7/19,10/1 | 39 | Porter | San Pierre | 32N | 5W | 14 | 41.23005 | 86.98834 |
| 9 | 95.70 | 7/18,10/3 | 50 | LaPorte | Lacrosse & English Lake | 33N, 32N | 4W | 4, 34, 4 | 41.25674 | 86.89004 |
| 10 | 103.66 | 7/17,10/2 | 47 | LaPorte | Knox West & English Lake | 33N | 3W | 15, 16 | 41.30786 | 86.76073 |
| 11 | 114.05 | 7/16,10/9 | 36 | LaPorte | Kingsford Heights | 34N | 2W | 4 | 41.42415 | 86.65543 |
| 12 | 117.56 | 7/16,10/9 | 36 | LaPorte | Hamlet | 35N | 2W | 23 | 41.46661 | 86.61094 |
| 13 | 124.25 | 7/12,11/2 | 31 | LaPorte | Stillwell | 36N | 1W | 27, 28 | 41.53206 | 86.52817 |
| B1 | 57.1 | 7/31 | NA | Lake | Illiana Heights | 31N | 10W | 1 | | |
| B2 | 95.7 | 7/10 | NA | LaPorte | Lacrosse & English Lake | 33N | 4W | 33, 34 | | |

River stations were sampled in a downstream direction for a total of four runs (two on each side). At most stations, alternate runs collecting fish from "cover" and "open" areas were made. "Cover" sampling consisted of electrofishing in and around large woody debris (LWD) such as bush piles, log jams, and root wads. Areas sampled where LWD was not apparent were considered "open".

The stations were described, measured and coordinates of the upstream and downstream station boundaries were recorded. Other information recorded included canopy, water clarity (secchi disk), air temperature, water temperature, dissolved oxygen (DO), conductivity, pH, alkalinity, and total dissolved solids (TDS).

Sampling was repeated at 11 of the 13 main branch stations between October 2 and November 2. Fall sampling was identical to summer sampling except only game fish were collected. In addition, a qualitative habitat evaluation index (QHEI) was calculated for each station. Rain and high water kept the sampling crew from surveying all 13 river stations as originally planned (Table 1).

Seining was conducted at several sites but eventually abandoned. Steep shorelines, fast current, and deep water made seining difficult and inefficient. Seining produced two additional species beyond those collected by electrofishing.

Work in 2002 consisted of a direct contact angler creel survey and an electrofishing survey for gamefish. Both surveys were conducted at five stations along the Kankakee. Fall survey and creel stations were LaSalle FWA (Station 2), Grand Kankakee County Park (Station 5), Dunn's Bridge (Station 8), Kankakee FWA (Station 10), and Kingsbury FWA (Station 13).

The creel survey was conducted from April 17 to October 3. A random sampling schedule allowed each site to be sampled twice in each two-week period. Two six-hour periods were used: 7 am to 1 pm (A shift) and 2 pm to 8 pm (B shift). During each shift, the creel clerk used a boat to patrol a predetermined section of the river (Table 2). Counts of all anglers (both boat and shore) were made twice during each shift. Between counts, the clerk interviewed fishermen to determine the following information: hours fished, preferred species, catch and release, harvest, county of origin, and lengths of fish harvested. Anglers were also asked for the following information:

1. How many times each year they fish on the river.
2. If fishing is improving, staying the same, or declining.
3. If they are satisfied or dissatisfied with their trip.
4. If they support the walleye stocking program.

Count and interview data were separated by station, shift, and type of day (i.e. weekday or weekend day). Per trip averages were calculated for angling effort, number of fish harvested by species, average number of fish caught and released by species. Average angler counts for each station-shift-day type combination were used to expand results to arrive at an overall estimate of effort, harvest, and catch and release at each station.

| | Downstream | | Upstream | | River Mile (RM) | | Total Length |
|---|---|---|---|---|---|---|---|
| Station | Lat | Lon | Lat | Lon | Lower | Upper | (mi.) |
| LaSalle FWA | N 41.16627 | W 87.52654 | N 41.17039 | W 87.45848 | 57.20 | 60.74 | 3.54 |
| Gr. Kankakee Park | N 41.21905 | W 87.27459 | N 41.23553 | W 87.22648 | 72.24 | 74.99 | 2.75 |
| Dunn's Bridge | N 41.22053 | W 86.97292 | N 41.23849 | W 86.92825 | 90.35 | 93.32 | 2.97 |
| Kankakee FWA | N 41.27152 | W 86.82570 | N 41.33853 | W 86.73512 | 99.35 | 105.72 | 6.37 |
| Kingsbury FWA | N 41.48260 | W 86.60135 | N 41.50841 | W 86.54239 | 118.74 | 122.33 | 3.59 |

Table 2. Description of creel station locations.

While not originally included in the workplan, the 2001 progress report for the project indicated a need for further information regarding walleye abundance and size structure prior to the initiation of walleye stocking in 2003. Thus, the fall 2002 electrofishing survey was added to the schedule. This sample consisted of 30 minutes of daytime DC electrofishing at each of the five creel stations

In June of 2003 and 2004, the Indiana Division of Fish and Wildlife stocked walleye at each of the four uppermost fall sample stations. In both years, additional fall gamefish sampling was done to evaluate the stocking and any impacts to the fishery overall. Like the fall 2002 sample, the fall 2003 sample (Oct 10 - 13) consisted of 0.5 hours of daytime DC electrofishing at each of the five stations. The 2004 sample also consisted of five 30 minute stations collecting all gamefish (Sept. 20 - 27) and an additional five 30 minute stations targeting only walleye (Nov. 16, 17). Poor walleye catch in the September sample prompted the additional November effort.

During the summer survey and each of the fall game fish surveys, scale samples were taken from a subset of game fish for analysis of age and growth of each species. Mean length-at-age was calculated for selected species using the Fraser-Lee method of back calculation (Anderson and Neumann, 1996).

## Results

### Summer Survey 2001

We collected 1,410 fish weighing 2,579 pounds during the 2001 survey of 13 main branch Kankakee stations (Appendix A). Thirty-seven species representing 12 families were identified. Four species were found at all 13 stations. Two species were found at 12 stations and three species were found at 10 stations. Eleven species

were found at only one station. Total effort for the summer survey was 13 hours of DC electrofishing.

Nearly half of the fish collected by both number (49.4%) and weight (49.9%) were from the sucker family (Table 3). The sucker family was also the most diverse, represented by 10 species. The second most abundant family by both number (35.5%) and weight (43.7%) was the minnow family, represented by six species. Combined, suckers and minnows made up 84.9% of the sample by number and 93.6% of the sample by weight.

| Family | Common Name | Number of Species | Number of Individuals | Percent Number | Weight | Percent Weight |
|---|---|---|---|---|---|---|
| Catostomidae | Suckers | 10 | 697 | 49.4% | 1285.93 | 49.9% |
| Cyprinidae | Minnows | 6 | 501 | 35.5% | 1125.71 | 43.7% |
| Centrarchidae | Sunfishes | 9 | 130 | 9.2% | 63.43 | 2.5% |
| Percidae | Perches | 3 | 25 | 1.8% | 15.35 | 0.6% |
| Esocidae | Pikes | 2 | 20 | 1.4% | 32.93 | 1.3% |
| Clupeidae | Herrings | 1 | 18 | 1.3% | 3.04 | 0.1% |
| Amiidae | Bowfin | 1 | 10 | 0.7% | 31.90 | 1.2% |
| Ictaluridae | Catfishes | 2 | 6 | 0.4% | 19.10 | 0.7% |
| Lepisosteidae | Gars | 1 | 1 | 0.1% | 1.30 | 0.1% |
| Umbridae | Mudminnows | 1 | 1 | 0.1% | 0.01 | ** |
| Cottidae | Sculpins | 1 | 1 | 0.1% | 0.01 | ** |
| Total | | | 1410 | | 2578.71 | |

** Less than 0.1%

Table 3. Families of fishes and relative contributions to the summer sample.

**Sucker Family - *Catostomidae***

Shorthead redhorse was the most abundant sucker collected. The 231 shortheads collected came from all but station 13, the highest in the watershed. This species was second only to carp in abundance by number.

Silver redhorse were fourth in abundance by number in the summer survey (12.3%). They were found at all 13 main branch stations. Silver redhorse were the second most abundant fish in the survey by weight (13.3%). Golden redhorse, (found at 10 stations), and river redhorse, (found at nine stations), were also common in the survey catch.

Smallmouth buffalo (found at 10 stations), bigmouth buffalo (found at eight stations), and black buffalo (found at six stations) combined to account for nearly 18% of the sample by weight.

Quillback were found at all 13 stations. Northern hog suckers were also quite common (sampled at nine stations). White suckers were found at only three stations.

**Minnow Family - *Cyprinidae***

Carp, an introduced species, were found at all 13 stations. Carp were also the most abundant species collected in the survey by both number (20.7%) and weight (43.6%). Spotfin shiners were also present at all 13 stations. Other minnows collected in low numbers included common shiner, bluntnose minnow, emerald shiner and golden shiner.

**Sunfish Family - *Centrarchidae***

The nine species collected from this family made up 9.2% of the total collection by number and 2.5% by weight. Thirty-five bluegill were collected at 10 stations. Bluegill ranged in length from 3.0 to 6.8 inches. Largemouth bass and smallmouth bass were fairly evenly distributed throughout the length of the study area. We collected 33 largemouth ranging in length from 6.6 to 18.7 inches. Largemouth were collected from nine stations. We collected 32 smallmouth bass ranging in length from 2.8 to 18.2 inches. Smallmouth were collected from 12 stations.

Other sunfish collected included 15 green sunfish found at four stations and seven rock bass found at five stations. Rock bass ranged in length from 6.2 to 8.0 inches. Individuals from four additional species including black crappie redear sunfish, warmouth, and pumpkinseed sunfish were present at only one station.

**Perch Family - *Percidae***

Three species from the perch family were collected. Sixteen logperch were collected from eight stations. Six walleye were collected ranging in length from 11.5 to 28.5 inches. Walleye were collected from four stations (8, 9, 10, and 11). One blackside darter was collected from station 9 and two were collected at station 10.

**Pike Family - *Esocidae***

Although few in number, northern pike were evenly distributed along the river. The 10 pike collected ranged in length from 6.9 to 35.4 inches and were collected at seven stations. Ten grass pickerel were collected at nine stations.

**Herring Family - *Clupeidae***

We collected 18 small gizzard shad ranging in length from 2.3 to 2.6 inches. They were sampled at six stations.

**Bowfin Family - *Amiidae***

Ten bowfin were collected at only three stations (7, 9 and 10).

**Catfish Family - *Ictaluridae***

Two species of catfish were collected from the main branch. Channel catfish were found at three stations (7, 9, and 13) and one black bullhead was collected at station 12. The five channel catfish ranged in length from 13.6 to 24.2 inches.

**Gar Family - *Lepisosteidae***

One spotted gar was collected at station 8.

**Mudminnow Family - *Umbridae***

One central mudminnow was collected at station 8.

**Sculpin Family - *Cottidae***

One mottled sculpin was collected at station 8.

**Additional Sampling**

During the summer survey, two bayous were also sampled (Appendix A). Each site was electrofished one hour. Eighteen species were collected at both Horseshoe Bend and Bullshinski Bayou. Seven species were found in the bayous that were not found at any of the main stream stations; spotted sucker, black redhorse, brown bullhead, yellow bullhead, white crappie, orangespotted sunfish, and blackstripe topminnow.

**Fall Survey 2001**

We collected 224 game fish from 11 stations sampled between October 2 and November 10 (Appendix B). Total weight of the fish examined was 218 pounds. Eight species were collected. Total effort for fall sampling was 11 hours of DC electrofishing. Growth summaries of the major game species collected in 2001 can be found in Appendix D.

Smallmouth bass were found at nine stations. They were not found at stations 11 and 13 in the upper watershed. Fish collected ranged in length from 2.3 to 16.9 inches. Twelve of the 57 fish collected (21%) were twelve inches or longer and legal size

Largemouth bass were present at seven stations. They were not found at station six or at the three most upstream stations (11, 12, and 13). Largemouth ranged in length from 3.1 to 16.9 inches and 20 of the 39 fish collected (51%) were 12 inches or longer.

Rock bass were found at eight stations. They were not collected at stations nine, 12, or 13. The 34 rock bass examined ranged in length from 4.0 to 10.2 inches. Three of the fish were eight inches or longer.

Thirty-two channel catfish were collected ranging in length from 11.2 to 24.8 inches. They were collected at stations 11 and 13.

Bluegill were collected at seven stations. Eleven (39%) were six inches or longer.

Walleye were found at eight stations. They were not recorded at stations 4, 11, or 12. The 15 walleye examined ranged in length from 9.8 to 22.2 inches. Twelve walleye (80%) were legal size, 14 inches or longer.

Thirteen northern pike were collected between 9.5 and 35.9 inches long. Pike were found at eight stations

spanning the length of the study area. Eight of the pike (62%) were at or above the 20-inch size limit.

Black crappie were collected at stations 1, 4, and 10. The six fish collected ranged in length from 5.3 to 10.3 inches.

Seining on the main channel during fall sampling produced two additional fish species, central stoneroller and johnny darter. Few seine samples were conducted before deciding that conditions were too poor for effective sampling. The total number of species collected in the 2001 survey was 46 when summer electrofishing on the main channel and bayous, fall electrofishing on the main channel, and main channel seining are combined.

| Station | Total Fishing pressure (hrs) | Total Pressure per River Mile | Angler CPE* (game fish/hr) |
|---|---|---|---|
| LaSalle FWA | 16,731 | 4,726 | 0.63 |
| Grand Kankakee | 3,773 | 1,372 | 0.29 |
| Dunn's Bridge | 2,591 | 873 | 0.13 |
| Kankakee FWA | 4,272 | 671 | 0.32 |
| Kingsbury FWA | 3,215 | 896 | 0.38 |

Table 3. Estimated fishing pressure, effort per river mile, and catch per effort for each of the five creel stations.
*CPE = (Total Harvest + Catch & Release) / Total Fishing Pressure

**Quantitative Habitat Evaluation Index (QHEI)**

QHEI scores for 11 stations sampled ranged from a high of 50 at stations 6 and 9 (RM 79.75 and RM 95.7 to a low of 30.5 at station 13 (RM 124.25) (Table 1). QHEI scores between 45 and 60 indicate "Fair" aquatic habitat and scores below 45 are "Poor" habitat. QHEI scores indicate habitat is poor at five of 11 Kankakee River stations. QHEI scores were not calculated for stations 3 (RM 63.29) and 5 (RM 74.40) due to high water.

**2002 Creel Survey Results**

**Overall Results**

During the survey, 312 anglers from 8 counties and one other state were interviewed (Figure 1). All but one of the Indiana anglers interviewed originated from counties adjacent to the Kankakee River, indicating primarily local use. Angler satisfaction was high with 82% of the interviewees stating that they were satisfied with their experience. Overall, 8.9% of anglers surveyed thought the fishery was improving while 20.4% thought it was declining. The majority of anglers interviewed (70.6 %) thought the quality of the fishery was not changing or had no opinion on the topic. When asked if they would support a walleye-stocking program, 65% of the anglers interviewed indicated they would, while 2.8% of the interviewees voiced disapproval of the proposition. The remaining 32.2% were neutral on this issue.

Species preference among anglers was diverse. More than 43% of anglers surveyed indicated no species preference. The percentage of anglers specifically mentioning a species were as follows: channel catfish (22.8%), largemouth bass (16.3%), "panfish" (10.9%), walleye (10.6%), bluegill (8.0%), crappie (6.7%), northern pike (5.4%), smallmouth bass (4.8%), rock bass (4.5%), and carp (0.6%).

The LaSalle FWA station had the highest angling effort per mile and angler CPE (Table 3). Despite ranking second in CPE, Kingsbury FWA had the second lowest amount of angler effort per river mile.

An estimated 4,513 game fish were harvested from these five sites over the course of the creel survey. Table 4 shows the estimated harvest by station for each of the game species observed. Bluegill was the most harvested species comprising 58% of the total harvest. Other game species harvested and their contributions to total harvest include: crappie (14%), channel catfish (8%), walleye (7%), rock bass (5%), largemouth bass (4%), and northern pike (3%). No smallmouth bass harvest was observed during the survey.

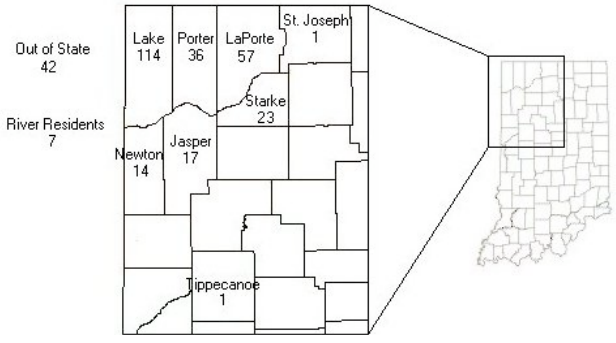


Figure 1. Origin of anglers interviewed during creel survey.

2002 Estimated Harvest

| | LaSalle FWA | | Gr. Kankakee | | Dunn's Bridge | | Kankakee FWA | | Kingsbury FWA | |
|---|---|---|---|---|---|---|---|---|---|---|
| Species | Shore | Boat | Shore | Boat | Shore | Boat | Shore | Boat | Shore | Boat |
| Bluegill | 253 | 1452 | 104 | 0 | 33 | 0 | 28 | 0 | 766 | 0 |
| Channel Catfish | 105 | 16 | 21 | 102 | 50 | 0 | 21 | 0 | 33 | 0 |
| Crappie | 0 | 587 | 0 | 57 | 0 | 0 | 0 | 0 | 0 | 0 |
| Largemouth Bass | 62 | 92 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| Northern Pike | 68 | 0 | 0 | 11 | 17 | 17 | 0 | 0 | 0 | 0 |
| Rock Bass | 141 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Walleye | 62 | 0 | 21 | 45 | 66 | 21 | 114 | 0 | 0 | 0 |
| Total | 722 | 2219 | 146 | 226 | 166 | 38 | 197 | 0 | 799 | 0 |

Table 4. Estimated harvest by species and site from the 2002 creel survey (April 17 - October 3).

**Creel Results By Station**

LaSalle FWA (RM 60.32)

LaSalle FWA received the most pressure per river mile (4,726 hrs/RM) of all stations surveyed. Anglers fished an estimated 16,731 hours at the Grand Kankakee station during the period of the survey. In that time, anglers caught an estimated 10,584 game fish from the Kankakee. The relative contributions to that total by species were: largemouth bass (39%), bluegill (36%), crappie (10%), northern pike (6%), rock bass (4%), walleye (3%), and channel catfish (2%). The angler catch rate for all game fish was 0.63 FPH. LaSalle FWA led in harvest per river mile (RM) for the following species: bluegill (481.7), crappie (165.8), rock bass (60.1), largemouth bass (42.5) and northern pike (19.2).

Grand Kankakee County Park (RM 74.4)

Anglers fished an estimated 3,773 hours at the Grand Kankakee station during the period of the survey. In that time, anglers caught an estimated 1,109 game fish from the station. The relative contributions to that total by species were: largemouth bass (33%), bluegill (19%), channel catfish (15%), smallmouth bass (13%), walleye (9%), crappie (5%), northern pike (4%), and rock bass (2%). The angler catch rate for all game fish was 0.29 FPH. The Grand Kankakee station ranked first in harvest of channel catfish (44.7) per RM and second in harvest of walleye (24.0), crappie (20.7) and largemouth bass (4.0) per RM.

Dunn’s Bridge (RM 89.52)

Anglers fished an estimated 2,591 hours at the Dunn’s Bridge station during the period of the survey. In that time, anglers caught an estimated 343 game fish from the Kankakee. The relative contributions to that total by species were: walleye (25%), bluegill (24%), rock bass (16%), channel catfish (15%), Northern pike (10%), largemouth bass (5%), and smallmouth bass (5%). The angler catch rate for all game fish was a meager 0.13 FPH. The Dunn's bridge station ranked first in harvest of walleye (29.3) and second in harvest of northern pike (11.4) per RM.

Kankakee FWA (RM 103.66)

Anglers fished an estimated 4,272 hours at the Kankakee FWA station. Anglers caught an estimated 1,351 fish from the Kankakee during the creel survey. The relative contributions to that total by species were: bluegill (56%), walleye (11 %), largemouth bass (10%), crappie (8%), rock bass (7%), smallmouth bass (6%), channel catfish (2%), and northern pike (1%). Despite ranking third in angler catch rate for all game fish (0.32 FPH), The Kankakee FWA station received the least fishing pressure per river mile (671 hrs/RM). Kankakee FWA ranked third in harvest of walleye (17.9) per RM.

Kingsbury FWA (RM 124.25)

Anglers fished an estimated 3,215 hours at the Kingsbury FWA station during the creel survey. Anglers caught an estimated 1,207 fish from the Kankakee in that time. The relative contributions to that total by species were: bluegill (82%), walleye (7%), smallmouth bass (7%), channel catfish (3%), walleye (7%), and rock bass (2%). Angler catch rates for all game fish were 0.38 fish per hour (FPH). Kingsbury FWA ranked second in bluegill harvest (213.4) per RM.

**Fall Survey 2002**

We collected 97 game fish from 5 stations sampled on October 2 and 3. Total weight of the fish examined was nearly 63 pounds. Ten species were collected (Appendix C). Total effort for fall sampling was 2.5 hours of DC electrofishing. Growth summaries from fish collected in 2002 can be found in Appendix D.

Largemouth bass were collected at all five stations. Thirty-nine largemouth were captured ranging from 5.3 to 16.7 inches in length. Ten of those fish (25.6%) were twelve inches in length or greater. Twenty-seven of the thirty-nine bass (69%) were captured at the LaSalle station.

Bluegill were present at all but one of the Fall 2002 stations. No bluegill were captured at the Grand Kankakee station. Twenty-eight bluegill were captured ranging in length from 2.5 to 7.3 inches. Twelve of these (43%) were six inches or greater. Nineteen (68%) were captured at the LaSalle station.

Eight smallmouth bass were collected at three stations. No smallmouth were present in the samples from the Kankakee and Kingsbury stations. Smallmouth ranged from 2.9 to 13.4 inches in length.

Northern Pike were present at the LaSalle, Kankakee, and Grand Kankakee stations. Seven pike were collected ranging from 9.8 to 32.4 inches in length. Three (43%) were greater than the 20-inch legal size limit.

Four channel catfish were collected from 3 stations. Channel catfish were present at the Kingsbury, Kankakee, and Grand Kankakee stations. These fish ranged from 13.3 to 26.2 inches in length.

Walleye were collected at two stations (Kingsbury and Kankakee). Three fish were captured ranging from 13.6 to 14.0 inches in length.

Three rock bass and three black crappie were also collected in the fall 2002 sample.

**Fall Survey 2003**

We collected 110 game fish from 5 stations in 2.5 hours of DC electrofishing. Total weight of the fish examined was estimated at 47.70 pounds. Nine species were collected (Appendix C). .

Thirty-three smallmouth bass were collected. Smallmouth were collected at each of the five stations. Smallmouth ranged from 4.6 to 13.2 inches in length. Only two of these were of legal size.

Bluegill were present at all but one of the Fall 2003 stations. No bluegill were captured at the Grand Kankakee station. Twenty bluegill were captured ranging in length from 2.5 to 7.3 inches. Ten (50%) were captured at the LaSalle station.

Walleye were collected at all stations. Fifteen fish were captured ranging from 4.5 to 17.3 inches in length. Ten of these walleye were young-of-the-year. The remaining five were all of legal size.

Largemouth bass were collected at the three lower stations. Fifteen largemouth were captured ranging from 3.3 to 16.8 inches in length. Seven of those fish (46.6%) were twelve inches in length or greater. Largemouth bass accounted for nearly 25% of the total weight of fishes collected.

Fifteen rock bass were collected and were present at all stations except Kingsbury FWA. These fish ranged from 4.0 to 8.8 inches in length.

Six channel catfish were collected from 3 stations. Channel catfish were present at the Kingsbury, Kankakee FWA, and LaSalle FWA stations. These fish ranged from 14.0 20.2 inches in length.

Two specimens of Northern pike, white crappie, and black crappie were also collected in the 2003 sample.

**Fall Survey 2004**

We collected 83 game fish from 5 stations in the fall 2004 samples. Total weight of the fish examined was nearly 55 pounds. Eight species were collected (Appendix C). Total effort for fall sampling was 2.5 hours of DC electrofishing for all game fish and an additional 2.5 hours targeting walleye only.

Smallmouth bass were collected at all five stations. In all, twenty-four smallmouth bass were collected and ranged from 4.3 to 15.4 inches in length. Four of these (16.7%) were legal size. Smallmouth comprised 22.5% of the total weight of the sample.

Largemouth bass were collected at all stations except Kankakee FWA. Twenty-three largemouth were captured ranging from 6.1 to 16.9 inches in length. Thirteen of these fish (56.5%) were twelve inches in length or greater. Eighteen of twenty-three largemouth bass (78.3%) were captured at the LaSalle station. Largemouth

comprised 43.6% of the overall sample weight.

Walleye were collected at all stations except LaSalle FWA. Sixteen walleye were captured ranging from 8.0 to 16.4 inches in length. Seven of these were young-of-the year. At least seven more were age I+. Thus, no less than 87.5% of the walleye collected in 2004 were probably the result of the 2003 and 2004 stocking. Only one legal size walleye was collected.

Thirteen rock bass were sampled and ranged from 4.7 to 8.0 inches in length. Rock bass were collected at all stations except Kingsbury FWA.

Other species collected in fall 2004 include: bluegill (3), Northern pike (2), channel catfish (1), and black crappie (1).

**Game Fish Distribution**

As expected, game fish were fairly ubiquitous across the five stations used in the game fish evaluations. Between the summer survey and all of the fall game fish samples, smallmouth bass, largemouth bass, walleye, bluegill, northern pike, and channel catfish were collected at each of these stations at least once. Rock bass were collected at all stations except Kingsbury FWA. Black Crappie were collected at all stations except Dunn's Bridge. White crappie were only collected at two stations (Dunn's Bridge and Kankakee FWA). A single yellow perch was collected at the Kingsbury station.

**Game Fish Growth**

Results of the growth analysis for game fish were comparable to results obtained in the 1981 Kankakee survey (Appendix D). Both largemouth and smallmouth bass, on average, reached legal size (12 inches) at approximately age IV (Figure 2). Bluegill were estimated to reach quality size (6 inches) at approximately age IV. Walleye exhibited excellent growth reaching legal size (14 inches) in just two years. Temporal comparisons of growth data collected between 2001 and 2004 show no significant impacts of the walleye stocking on other major game species, however, occasional monitoring of abundance and growth of other species will be necessary to ensure stocking does not exceed forage availability.

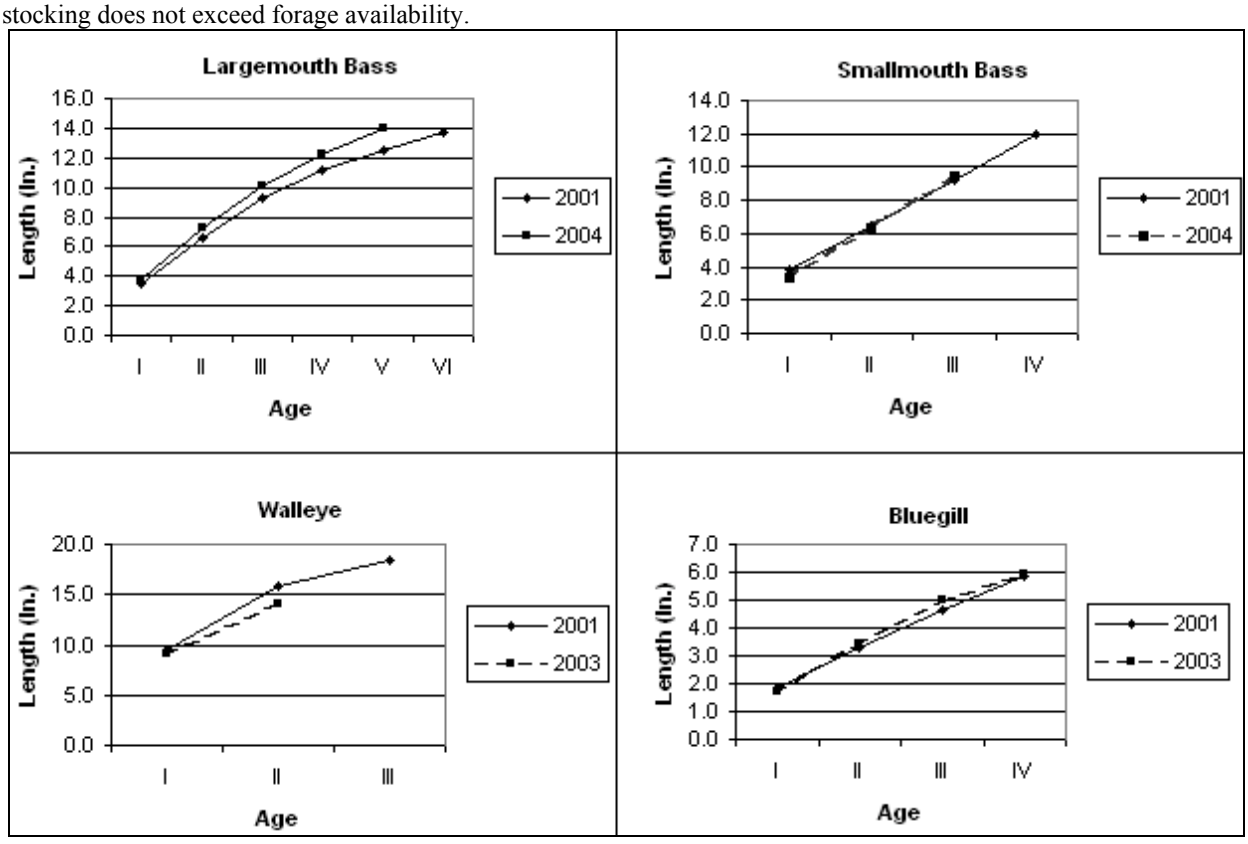



Figure 2. Growth of major game species collected between 2001 and 2004.

## Discussion

Forty-six species were identified in the 2001 fish community survey catch, similar to 1981 when 48 species were collected. The methods used in the two surveys differed slightly.

One way to compare differences in fish populations is by calculating catch per unit effort (CPE), e.g. the number of fish collected per hour of electrofishing. CPE's were also calculated based on habitat type ("Cover", "Open", or "Bayou"). In the summer sample, CPE for all fish was 108.5 fish per hour (FPH). The CPE for game fish was 5.8 FPH in "open" (areas without LWD) and 50 FPH in the "bayou" stations. Game fish were collected at the rate of 15.8 FPH from "cover" stations (in and around LWD). Bluegill and largemouth bass were more abundant in "cover" areas. Walleye were collected at the rate of 0.8 FPH from "cover" compared to 0.2 FPH from "open areas. Game fish were collected at the rate of 18.8 FPH in the fall 2001 sample. CPE of game fish from cover was more than three times the CPE of fish from "open" areas (35.0 FPH and 11.4 FPH respectively). The differences between catch rates in the "open" and "cover" areas highlight the importance of in stream cover. In a channelized system such as the Kankakee, this woody structure provides the only refuge for fish from sometimes torrent flows. While questions remain to be answered regarding production versus aggregation, it is apparent that gamefish use this cover frequently. This woody structure also provides additional habitat diversity that is likely to benefit numerous nongame species. Any feasible measures should be used to protect and enhance the presence of woody structure in the Kankakee.

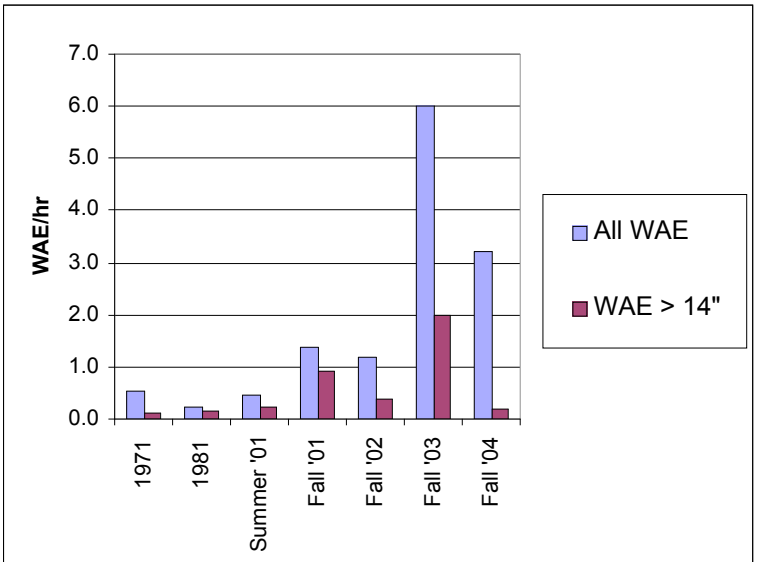


Figure 3. Historic walleye electrofishing CPE's from Indiana Surveys

The fall surveys beginning in 2001 show improvement in walleye abundance (Figure 3). While an effect of equipment (AC vs. DC electrofishing) and timing of the sample (late summer vs. mid to late fall) may add to the fall numbers, the increase realized between the fall '02 sample and the fall '03 sample can be directly attributed to the success of the summer '03 stocking. Young of the year account for two-thirds of the walleye collected in the fall of 2003. Young of the year and age I walleye each account for 43.8% of the walleye collected in the fall 2004 samples. These fish are all likely to be the result of the 2003 and 2004 stocking efforts by DFW.

The decrease in walleye CPUE from fall 2003 to fall 2004 may have been due to the timing of the samples. The September sample in 2004 yielded only four walleye (1.6 FPH). The November sample, which repeated the same stations, yielded twelve walleye (4.8 FPH). Warm water temperatures (18.0$^{o}$ C) and sunny conditions probably reduced our overall efficiency in September.

Preliminary data indicates that many of the adult walleye collected in Indiana waters of the Kankakee and its tributaries were released by the Illinois DNR (ILDNR). All walleyes stocked in the Kankakee by ILDNR up to and including 2003 were marked with Oxytetracycline (OTC). By extracting and processing otoliths from Kankakee River walleye, we can determine whether individuals from those year-classes originated in the ILDNR hatcheries or from some other source (i.e. natural production, lake stockings in the watershed, etc.). In the fall of 2002, fourteen walleye from 13.6 to 17.0 inches in length were collected from the Kankakee, Iroquois, and Yellow Rivers and sent to ILDNR for analysis. Of these fourteen fish, twelve were confirmed to be of hatchery origin. One marked fish was collected from the Kankakee at Kingsbury Fish and Wildlife area, more 67 miles upstream of the Indiana-Illinois state line.

Between 2000 and 2003, ILDNR stocked over a half million fry and a quarter million fingerlings into Kankakee waters. ILDNR's efforts have resulted in increases in electrofishing CPE since the walleye enhancement program initiation. ILDNR records indicate CPE's similar to those observed by the Indiana DNR from 1975 to 2000. Illinois CPE's increased by nearly ten-fold in 2001 and by nearly 20-fold in 2003. The benefits provided by this program are apparent.

Continued evaluation of Indiana walleye stockings will be necessary to determine the success of this program. In both 2003 and 2004 ILDNR's surplus of hatchery-reared walleye fell short of our requested number of fish. Despite this, preliminary data indicates that walleye stocking in the Kankakee River watershed by ILDNR and DFW is making significant contributions to walleye abundance.

Methods for evaluating walleye stocking in lakes as described in Shipman (1991) are unlikely to provide a good evaluation of the success of river stockings due to differences in lake and river habitat and difficulties associated with conducting river creels. Environmental conditions should also be considered for the evaluations. Poor walleye catch in the Sept./Oct. sample in 2004 may indicate that conditions were inadequate for effectively sampling walleye. The improved catch in the November sample was likely due to cooler water temperatures and overcast skies. Thus, whenever possible, fall electrofishing samples targeting walleye should be postponed until water temperatures in the river are no higher than $15^{o}$ C and skies are mostly cloudy to overcast.

**Recommendations:**

**1.) Continue the walleye stocking program using surplus production from the Illinois hatchery system.** Fingerlings stocked should come from Kankakee River broodstock. Success of annual stockings should be evaluated each fall using methods outlined by Shipman (1991). If possible, all walleye stocked should be marked with OTC. Analysis of otoliths collected during surveys or from anglers could provide insight into the relative contribution of natural walleye production in the system.

**2.) Evaluate the walleye stocking program's impact on angler use and the fish community.** Following a final determination on the success or failure of the stocking program, a comprehensive fishery survey should be conducted to determine impacts to all species. Also, a creel survey should be conducted in 2007 to determine if increases have been made in targeted walleye-angling effort, catch rates, and harvest.

**3.) Promote interstate cooperation.** To maximize program benefits and effectiveness, management of inter-jurisdictional watersheds should consider the watershed as a whole. Lines of communication between ILDNR and the DFW should be maintained to develop watershed goals and to facilitate coordination of management activities.

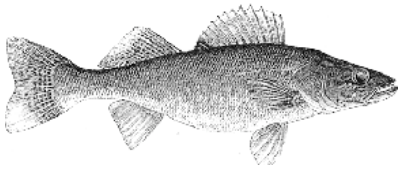
**4.) Protect and enhance large woody debris in the Upper Kankakee watershed.** Habitat has a tremendous influence on the quality of associated fisheries. The Upper Kankakee watershed has a long history of channelization and dredging. Over the years, some improvement has been realized and the amount of LWD in the river is increasing. Caution should be exercised in balancing drainage and habitat issues.

**5.) Develop a standard for evaluating Percid stockings in Indiana rivers and streams.** Currently, walleye stockings in lakes are evaluated according to methods from Shipman (1991). Differences in lake and riverine habitats require a separate standard for rivers and streams.

Submitted by: Jeremy Price, assistant fisheries biologist
Bob Robertson, fisheries biologist

Date: 1/8/2005

Approved by: _____
Stu Shipman, fisheries supervisor



## Literature Cited

Anderson, R.O. and R.M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 *in* B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Gerking, S. 1945. Distribution of the fishes of Indiana. Investigations of Indiana Lakes and Streams. 3: 1-137. Indiana Department of Conservation. Indianapolis, IN.

Robertson, R.N. and N. Ledet. 1981. A fisheries survey of the Kankakee River in Indiana. Indiana Division of Fish and Wildlife. Indianapolis, IN.

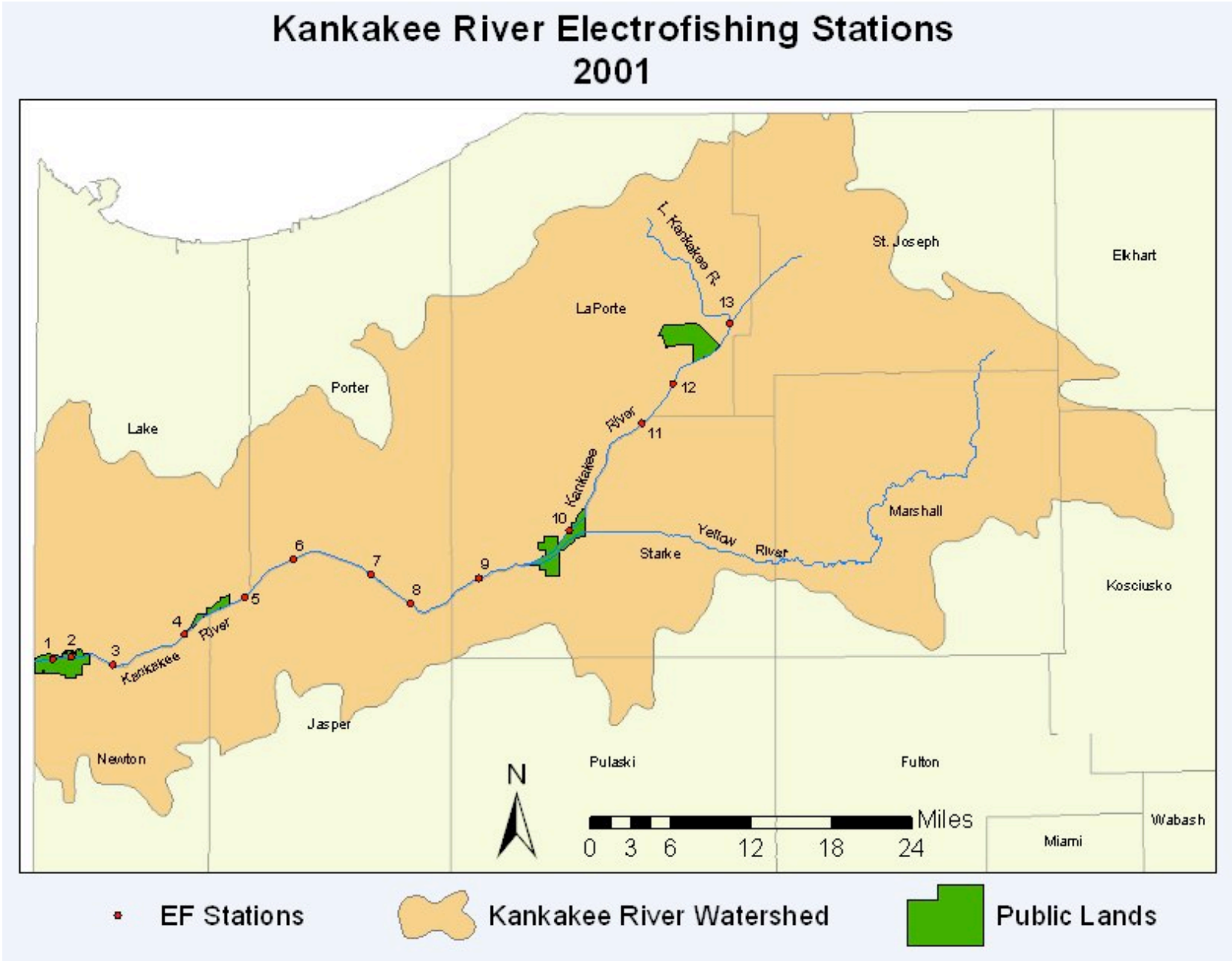
Robertson, R.N. 1972. Kankakee River Basin stream survey report. Indiana Division of Fish and Wildlife. Indianapolis, IN.

Seegert, G. Distribution of Fishes in the Kankakee River Basin of Indiana. Prepared for Indiana Division of Fish and Wildlife – Nongame and Endangered Wildlife Program. Indianapolis, IN.

Shipman, S.T. 1991. Determination of walleye year class strength utilizing standardized fall electrofishing techniques. Indiana Division of Fish and Wildlife. Indianapolis, IN.

## Appendix A.

## Results from summer 2001 fishery survey.


Kankakee River Electrofishing Stations
2001
L. Kankakee R.
St. Joseph
Elkhart
LaPorte
Porter
Lake
Kankakee River
Marshall
Yellow River
Starke
Kosciusko
Jasper
Newton
Pulaski
Fulton
Miami
Wabash
N
Miles
0 3 6 12 18 24
EF Stations
Kankakee River Watershed
Public Lands

| SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT: Summer 2001 | | | | | | |
|---|---|---|---|---|---|---|
| *COMMON NAME OF FISH | NUMBER | PERCENT | LENGTH RANGE *(Inches)* | WEIGHT *(Pounds)* | PERCENT | Occurrence |
| Carp | 292 | 20.7 | 13.3 - 25.0" | 1124.00 | 43.6 | 1,2,3,4,5,6,7,8,9,10,11,12,13 |
| Shorthead redhorse | 231 | 16.4 | 6.7 - 16.8" | 189.22 | 7.3 | 2,3,4,5,6,7,8,9,10,11,12,13 |
| Spotfin shiner | 199 | 14.1 | 1.5 - 3.9" | 1.47 | 0.1 | 1,2,3,4,5,6,7,8,9,10,11,12,13 |
| Silver redhorse | 174 | 12.3 | 4.8 - 22.3" | 343.08 | 13.3 | 1,2,3,4,5,6,7,8,9,10,11,12,13 |
| Quillback carpsucker | 99 | 7.0 | 13.5 - 18.2" | 175.80 | 6.8 | 1,2,3,4,5,6,7,8,9,10,11,12,13 |
| Golden redhorse | 51 | 3.6 | 7.0 - 16.9" | 69.08 | 2.7 | 1,2,4,5,6,7,8,9,12,13 |
| Smallmouth buffalo | 47 | 3.3 | 14.1 - 31.6" | 213.51 | 8.3 | 1,2,5,6,7,8,9,10,11,12 |
| Bluegill | 35 | 2.5 | 3.0 - 6.8" | 3.53 | 0.1 | 1,2,3,4,5,7,9,11,12,13 |
| Largemouth bass | 33 | 2.3 | 6.6 - 18.7" | 32.12 | 1.2 | 1,2,3,4,7,8,9,10,12 |
| Smallmouth bass | 32 | 2.3 | 2.8 - 18.2" | 24.54 | 1.0 | 1,2,3,4,5,6,7,8,9,10,12,13 |
| Bigmouth buffalo | 32 | 2.3 | 15.0 - 29.5" | 159.03 | 6.2 | 1,2,3,6,7,8,10,11 |
| Northern hogsucker | 23 | 1.6 | 6.9 - 13.4" | 8.55 | 0.3 | 2,4,7,8,9,10,11,12,13 |
| Black buffalo | 23 | 1.6 | 14.2 -25.0" | 81.42 | 3.2 | 4,5,7,9,10,11 |
| Gizzard shad | 18 | 1.3 | 2.3 - 2.6" | 3.04 | 0.1 | 1,4,5,7,9,10 |
| Logperch | 16 | 1.1 | 2.1 - 5.3" | 0.43 | ** | 4,5,6,7,8,10,11,13 |
| Green sunfish | 15 | 1.1 | 1.5 - 5.1" | 0.41 | ** | 1,5,10,11 |
| River redhorse | 12 | 0.9 | 16.0 - 21.4" | 40.89 | 1.6 | 2,4,5,6,7,8,9,10,12 |
| Northern pike | 10 | 0.7 | 6.9 - 35.4" | 32.37 | 1.3 | 2,3,4,7,10,12,13 |
| Bowfin | 10 | 0.7 | 16.8 - 24.5" | 31.90 | 1.2 | 7,9,10 |
| Grass pickerel | 10 | 0.7 | 3.4" - 7.6" | 0.56 | ** | 3,5,6,7,8,9,10,11,12 |
| Rock bass | 7 | 0.5 | 6.2 - 8.0" | 2.07 | 0.1 | 1,3,4,9,10 |
| Walleye | 6 | 0.4 | 11.5 - 28.5" | 14.90 | 0.6 | 8,9,10,11 |
| Channel catfish | 5 | 0.4 | 13.6 - 24.2" | 18.90 | 0.7 | 7,9,13 |
| Common shiner | 5 | 0.4 | 3.5 - 4.2" | 0.20 | ** | 6 |
| White sucker | 5 | 0.4 | 11.2 - 15.4" | 5.35 | 0.2 | 4,10,12 |
| Blackside darter | 3 | 0.2 | 3.7" | 0.02 | ** | 9,10 |
| Bluntnose minnow | 3 | 0.2 | 2.2" | 0.02 | ** | 1,3,10 |
| Black crappie | 3 | 0.2 | 6.3 - 8.2" | 0.63 | ** | 4 |
| Redear sunfish | 2 | 0.1 | 2.3 - 2.5" | 0.02 | ** | 12 |
| Warmouth | 2 | 0.1 | 2.5 - 3.6" | 0.02 | ** | 12 |
| Emerald shiner | 1 | 0.1 | 2.6" | 0.01 | ** | 8 |
| Spotted gar | 1 | 0.1 | 20.9" | 1.30 | 0.1 | 8 |
| Mottled sculpin | 1 | 0.1 | 2.8" | 0.01 | ** | 8 |
| Central mudminnow | 1 | 0.1 | 4.4" | 0.01 | ** | 8 |
| Pumpkinseed | 1 | 0.1 | 5.1" | 0.09 | ** | 1 |
| Golden shiner | 1 | 0.1 | 4.2" | 0.01 | ** | 8 |
| Black bullhead | 1 | 0.1 | 5.6" | 0.20 | ** | 12 |
| | | | | | | |
| **TOTAL** | 1410 | | | 2578.71 | | |

*Common names of fishes recognized by the American Fisheries Society

** less than 0.1 percent

## Appendix B.

## Results from fall 2001 gamefish survey.

# Kankakee River

## Game Species Length Frequency

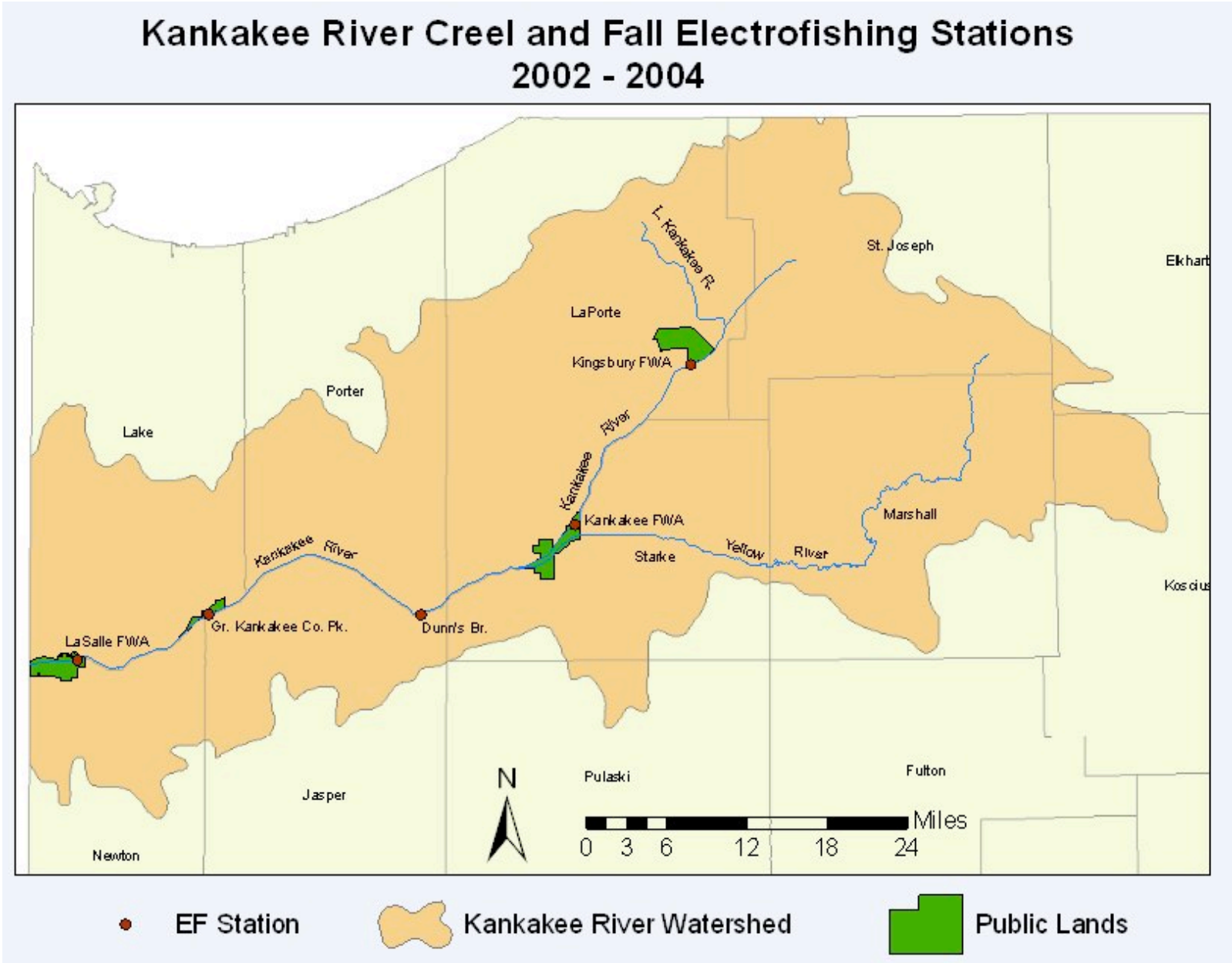
Fall Sample 2001

(11 stations; 11 hours DC electrofishing)

| | Species | | | | | | |
|---|---|---|---|---|---|---|---|
| Length | Smallmouth bass | Largemouth bass | Rock bass | Channel catfish | Bluegill | Walleye | Northern pike |
| <=3.0 | 2 | 2 | | | 3 | | |
| 3.5 | 1 | 1 | | | 3 | | |
| 4.0 | | 3 | 2 | | 1 | | |
| 4.5 | | 1 | | | 4 | | |
| 5.0 | | | 1 | | 4 | | |
| 5.5 | 2 | | 4 | | 2 | | |
| 6.0 | 2 | | 5 | | 5 | | |
| 6.5 | 1 | 1 | 5 | | 5 | | |
| 7.0 | 6 | 1 | 5 | | 1 | | |
| 7.5 | 3 | | 5 | | | | |
| 8.0 | 8 | 2 | 4 | | | | |
| 8.5 | 6 | 1 | | | | | |
| 9.0 | 1 | | | | | | |
| 9.5 | 4 | | 1 | | | | 1 |
| 10.0 | 3 | 3 | 2 | | | 2 | |
| 10.5 | 3 | | | | | | 1 |
| 11.0 | 2 | 2 | | 1 | | | |
| 11.5 | 1 | 2 | | 1 | | | |
| 12.0 | 3 | 1 | | 1 | | | |
| 12.5 | 3 | 5 | | 3 | | | |
| 13.0 | | 3 | | | | | |
| 13.5 | | 4 | | 1 | | 1 | |
| 14.0 | | 1 | | 2 | | 5 | |
| 14.5 | | | | | | | |
| 15.0 | 3 | 3 | | | | 4 | |
| 15.5 | | 1 | | 3 | | | |
| 16.0 | 2 | | | 3 | | | 2 |
| 16.5 | | 1 | | 2 | | | |
| 17.0 | 1 | | | 1 | | | |
| 17.5 | | 1 | | | | | |
| 18.0 | | | | 3 | | | |
| 18.5 | | | | 1 | | | |
| 19.0 | | | | 1 | | 1 | 1 |
| 19.5 | | | | | | 1 | |
| 20.0 | | | | 1 | | | 1 |
| 20.5 | | | | | | | |
| >=21.0 | | | | 8 | | 1 | 7 |
| Total | 57 | 39 | 34 | 32 | 28 | 15 | 13 |

## Appendix C.

## Results from fall 2002 - 04 game fish surveys.


Kankakee River Creel and Fall Electrofishing Stations
2002 - 2004
L. Kankakee R.
St. Joseph
Elkhart
LaPorte
Kingsbury FWA
Porter
Lake
River
Kankakee
Kankakee FWA
Marshall
Kankakee River
Starke
Yellow
River
Kosciu
LaSalle FWA
Gr. Kankakee Co. Pk.
Dunn's Br.
N
Pulaski
Fulton
Jasper
Miles
0 3 6 12 18 24
Newton
EF Station
Kankakee River Watershed
Public Lands

# Kankakee River

## Species Length Frequency

Fall Sample 2002

(Five stations; 2.5 hours DC electrofishing)

| | Species | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Length | Largemouth bass | Bluegill | Smallmouth bass | Northern pike | Channel catfish | Black crappie | Rock bass | Walleye |
| <=3.0 | | 7 | 1 | | | | | |
| 3.5 | | 1 | | | | | | |
| 4.0 | | 2 | | | | | | |
| 4.5 | | 3 | | | | | | |
| 5.0 | | 1 | 1 | | | | | |
| 5.5 | 1 | 2 | | | | 1 | | |
| 6.0 | 3 | 3 | | | | | 1 | |
| 6.5 | 3 | 7 | | | | | | |
| 7.0 | 4 | 1 | 2 | | | 2 | 1 | |
| 7.5 | 4 | 1 | 1 | | | | | |
| 8.0 | 3 | | | | | | 1 | |
| 8.5 | | | | | | | | |
| 9.0 | | | | | | | | |
| 9.5 | 2 | | | | | | | |
| 10.0 | 1 | | | 1 | | | | |
| 10.5 | 1 | | | | | | | |
| 11.0 | 1 | | | | | | | |
| 11.5 | 2 | | | | | | | |
| 12.0 | 7 | | | | | | | |
| 12.5 | 1 | | 2 | | | | | |
| 13.0 | 1 | | | 1 | | | | |
| 13.5 | | | 1 | | 1 | | | 2 |
| 14.0 | 1 | | | | | | | 1 |
| 14.5 | | | | | | | | |
| 15.0 | 1 | | | 1 | | | | |
| 15.5 | | | | | | | | |
| 16.0 | 1 | | | | | | | |
| 16.5 | 2 | | | | | | | |
| 17.0 | | | | | | | | |
| 17.5 | | | | | | | | |
| 18.0 | | | | | | | | |
| 18.5 | | | | | | | | |
| 19.0 | | | | | | | | |
| 19.5 | | | | 1 | | | | |
| 20.0 | | | | | | | | |
| 20.5 | | | | 1 | | | | |
| >=21.0 | | | | 2 | 3 | | | |
| Total | 39 | 28 | 8 | 7 | 4 | 3 | 3 | 3 |

# Kankakee River

## Species Length Frequency

Fall Sample 2003

(Five stations; 2.5 hours DC electrofishing)

| | Species | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Length | Smallmouth bass | Bluegill | Walleye | Largemouth bass | Rock bass | Channel catfish | White crappie | Black crappie | Northern pike |
| <=3.0 | | | | | | | 1 | | |
| 3.5 | | | | 1 | | | | | |
| 4.0 | | 1 | | | 1 | | | | |
| 4.5 | 3 | 2 | 1 | | | | | | |
| 5.0 | 3 | 2 | 3 | 1 | | | | | |
| 5.5 | 7 | 5 | 1 | | 1 | | | | |
| 6.0 | 3 | 3 | 1 | 1 | 1 | | | | |
| 6.5 | 1 | 3 | 1 | | 2 | | 1 | | |
| 7.0 | | 3 | 3 | | 3 | | | | |
| 7.5 | 1 | 1 | | | 1 | | | | |
| 8.0 | 2 | | | 1 | 3 | | | | |
| 8.5 | 2 | | | 1 | 2 | | | 1 | |
| 9.0 | 6 | | | 1 | 1 | | | | |
| 9.5 | 1 | | | 1 | | | | 1 | |
| 10.0 | 1 | | | 1 | | | | | 1 |
| 10.5 | 1 | | | | | | | | |
| 11.0 | | | | | | | | | |
| 11.5 | | | | | | | | | |
| 12.0 | | | | 1 | | | | | |
| 12.5 | 1 | | | | | | | | |
| 13.0 | 1 | | | 2 | | | | | |
| 13.5 | | | | 2 | | | | | |
| 14.0 | | | | | | 1 | | | |
| 14.5 | | | | 1 | | 1 | | | |
| 15.0 | | | | | | | | | |
| 15.5 | | | | | | 1 | | | |
| 16.0 | | | | | | | | | |
| 16.5 | | | 1 | | | 2 | | | |
| 17.0 | | | 2 | 1 | | | | | |
| 17.5 | | | 1 | | | | | | |
| 18.0 | | | 1 | | | | | | |
| 18.5 | | | | | | | | | |
| 19.0 | | | | | | | | | 1 |
| 19.5 | | | | | | | | | |
| 20.0 | | | | | | 1 | | | |
| 20.5 | | | | | | | | | |
| >=21.0 | | | | | | | | | |
| Total | 33 | 20 | 15 | 15 | 15 | 6 | 2 | 2 | 2 |

# Kankakee River

## Species Length Frequency

Fall Sample 2004

(5 stations; 2.5 hours DC electrofishing all game species,
additional 2.5 hours for walleye only)

| | Species | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Length | Smallmouth bass | Largemouth bass | Walleye | Rock bass | Bluegill | Northern Pike | Channel catfish | Black Crappie |
| <=3.0 | | | | | 1 | | | |
| 3.5 | | | | | 1 | | | 1 |
| 4.0 | | | | | | | | |
| 4.5 | 1 | | | 1 | | | | |
| 5.0 | 4 | | | 2 | | | | |
| 5.5 | 1 | | | 2 | | | | |
| 6.0 | 1 | 1 | | | 1 | | | |
| 6.5 | | 3 | | | | | | |
| 7.0 | | 1 | | 3 | | | | |
| 7.5 | 2 | | | 1 | | | | |
| 8.0 | | 2 | 3 | 4 | | | | |
| 8.5 | 1 | | 2 | | | | | |
| 9.0 | 2 | | 1 | | | | | |
| 9.5 | 3 | | | | | | | |
| 10.0 | 1 | | 1 | | | | | |
| 10.5 | 2 | 1 | | | | | | |
| 11.0 | 2 | 1 | | | | | | |
| 11.5 | | 1 | 3 | | | | | |
| 12.0 | | 2 | | | | | | |
| 12.5 | 1 | | 2 | | | | | |
| 13.0 | | 2 | 1 | | | | | |
| 13.5 | | | 2 | | | | | |
| 14.0 | 1 | 2 | | | | | | |
| 14.5 | | 2 | | | | | | |
| 15.0 | 1 | 3 | | | | | | |
| 15.5 | 1 | 1 | | | | | 1 | |
| 16.0 | | | | | | | | |
| 16.5 | | | 1 | | | | | |
| 17.0 | | 1 | | | | | | |
| 17.5 | | | | | | | | |
| 18.0 | | | | | | | | |
| 18.5 | | | | | | | | |
| 19.0 | | | | | | | | |
| 19.5 | | | | | | | | |
| 20.0 | | | | | | | | |
| 20.5 | | | | | | | | |
| >=21.0 | | | | | | 2 | | |
| Total | 24 | 23 | 16 | 13 | 3 | 2 | 1 | 1 |

## Appendix D.

## Gamefish growth summaries from 2001 - 2004.

# Kankakee River Game Fish Growth - 2001

| Walleye | Year | Number | Back Calculated Length(inches)at Each Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI | VII |
| Intercept = 2.2 | 2000 | 12 | 8.9 | | | | | | |
| | 1999 | 1 | 9.8 | 12.3 | | | | | |
| | 1998 | 4 | 10.1 | 15.7 | 18.4 | | | | |
| | 1997 | 1 | 8.6 | 14.5 | 17.8 | 20.1 | | | |
| | 1996 | 1 | 10.4 | 17.2 | 21.5 | 23.7 | 26.8 | | |
| | Average Length | | 9.5 | 15.7 | 18.4 | | | | |
| | Standard Deviation | | 0.84 | | | | | | |
| | Yr. Classes Averaged | | 2 | 1 | 1 | | | | |

| Smallmouth bass | Year | Number | Back Calculated Length(inches)at Each Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI | VII |
| Intercept = 1.4 | 2000 | 17 | 4.4 | | | | | | |
| | 1999 | 25 | 3.7 | 6.2 | | | | | |
| | 1998 | 19 | 3.7 | 6.8 | 9.5 | | | | |
| | 1997 | 3 | 3.9 | 6.5 | 9.3 | 12.4 | | | |
| | 1996 | 6 | 4.3 | 6.8 | 9.4 | 12.2 | 14.1 | | |
| | 1995 | 4 | 3.2 | 6.1 | 8.7 | 11.2 | 12.9 | 14.2 | |
| | Average Length | | 3.9 | 6.5 | 9.2 | 11.9 | 13.5 | 14.2 | |
| | Standard Deviation | | 0.45 | 0.32 | 0.37 | 0.63 | 0.85 | | |
| | Yr. Classes Averaged | | 6 | 5 | 4 | 3 | 2 | 1 | |

| Largemouth bass | Year | Number | Back Calculated Length(inches)at Each Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI | VII |
| Intercept = 0.8 | 2000 | 4 | 3.7 | | | | | | |
| | 1999 | 10 | 3.2 | 6.2 | | | | | |
| | 1998 | 11 | 3.7 | 6.8 | 9.3 | | | | |
| | 1997 | 10 | 3.5 | 7.0 | 9.5 | 11.4 | | | |
| | 1996 | 10 | 3.3 | 6.7 | 9.1 | 11.0 | 12.3 | | |
| | 1995 | 6 | 3.1 | 6.1 | 8.0 | 10.2 | 11.5 | 12.3 | |
| | 1994 | 5 | 3.9 | 7.0 | 10.3 | 12.3 | 13.8 | 15.1 | 16.1 |
| | Average Length | | 3.5 | 6.6 | 9.2 | 11.2 | 12.5 | 13.7 | 16.1 |
| | Standard Deviation | | 0.30 | 0.38 | 0.81 | 0.87 | 1.16 | 1.95 | |
| | Yr. Classes Averaged | | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

# Kankakee River Game Fish Growth - 2001, cont'd

| Rock bass | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI | VII |
| Intercept = 0.8 | | | | | | | | | |
| | 1999 | 6 | 1.7 | 3.3 | | | | | |
| | 1998 | 12 | 1.7 | 3.2 | 5.0 | | | | |
| | 1997 | 10 | 1.8 | 3.6 | 5.5 | 7.0 | | | |
| | 1996 | 6 | 1.7 | 3.1 | 4.7 | 5.9 | 6.7 | | |
| | 1995 | 3 | 1.6 | 3.2 | 5.1 | 6.5 | 7.6 | 8.6 | |
| | 1994 | 1 | 1.6 | 3.0 | 4.8 | 7.4 | 8.6 | 9.6 | 9.8 |
| | | | | | | | | | |
| | Average Length | | 1.7 | 3.3 | 5.1 | 6.5 | 7.2 | 8.6 | |
| | Standard Deviation | | 0.08 | 0.21 | 0.34 | 0.56 | 0.59 | | |
| | Yr. Classes Averaged | | 5 | 5 | 4 | 3 | 2 | 1 | |

| Bluegill | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI | VII |
| Intercept = 0.8 | 2000 | 4 | 2.3 | | | | | | |
| | 1999 | 8 | 1.7 | 3.3 | | | | | |
| | 1998 | 1 | 1.2 | 2.6 | 4.2 | | | | |
| | 1997 | 4 | 1.6 | 3.2 | 4.6 | 5.8 | | | |
| | | | | | | | | | |
| | Average Length | | 1.9 | 3.3 | 4.6 | 5.8 | | | |
| | Standard Deviation | | 0.40 | 0.06 | | | | | |
| | Yr. Classes Averaged | | 3 | 2 | 1 | 1 | | | |

# Kankakee River Game Fish Growth - 2002

| Largemouth bass | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 0.8 | 2001 | 13 | 3.7 | | | | | |
| | 2000 | 9 | 3.5 | 6.3 | | | | |
| | 1999 | 8 | 3.8 | 7.0 | 9.8 | | | |
| | 1998 | 4 | 3.2 | 6.3 | 9.1 | 10.7 | | |
| | 1997 | 3 | 4.2 | 7.0 | 9.3 | 11.0 | 12.6 | |
| | 1996 | 3 | 4.0 | 7.4 | 9.7 | 11.6 | 13.6 | 14.8 |
| | | | | | | | | |
| | Average Length | | 3.7 | 6.8 | 9.5 | 11.1 | 13.1 | 14.8 |
| | Standard Deviation | | 0.38 | 0.48 | 0.33 | 0.45 | 0.70 | |
| | Yr. Classes Averaged | | 6 | 5 | 4 | 3 | 2 | 1 |

| Bluegill | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 0.8 | 2001 | 6 | 1.9 | | | | | |
| | 2000 | 6 | 1.8 | 3.3 | | | | |
| | 1999 | 8 | 1.9 | 3.5 | 5.0 | | | |
| | 1998 | 4 | 2.1 | 3.6 | 5.0 | 5.8 | | |
| | | | | | | | | |
| | Average Length | | 1.9 | 3.5 | 5.0 | 5.8 | | |
| | Standard Deviation | | 0.12 | 0.17 | 0.02 | | | |
| | Yr. Classes Averaged | | 4 | 3 | 2 | 1 | | |

# Kankakee River Game Fish Growth - 2003

| Smallmouth bass | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 1.4 | 2002 | 8 | 3.3 | | | | | |
| | 2001 | 14 | 3.2 | 6.2 | | | | |
| | | | | | | | | |
| | 1999 | 1 | 3.1 | 5.0 | 7.2 | 10.6 | | |
| | | | | | | | | |
| | Average Length | | 3.3 | 6.2 | | | | |
| | Standard Deviation | | 0.08 | | | | | |
| | Yr. Classes Averaged | | 2 | 1 | | | | |

| Rock bass | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 1.0 | | | | | | | | |
| | 2001 | 1 | 1.6 | 2.7 | | | | |
| | 2000 | 9 | 1.8 | 3.7 | 5.7 | | | |
| | 1999 | 5 | 1.8 | 3.3 | 5.5 | 7.2 | | |
| | | | | | | | | |
| | Average Length | | 1.8 | 3.5 | 5.6 | 7.2 | | |
| | Standard Deviation | | 0.00 | 0.29 | 0.16 | | | |
| | Yr. Classes Averaged | | 2 | 2 | 2 | 1 | | |

| Bluegill | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 0.8 | 2002 | 1 | 2.2 | | | | | |
| | 2001 | 9 | 1.8 | 3.4 | | | | |
| | 2000 | 3 | 1.8 | 3.7 | 5.3 | | | |
| | 1999 | 5 | 1.5 | 3.1 | 4.7 | 6.0 | | |
| | 1998 | 2 | 1.3 | 2.3 | 3.8 | 5.3 | 6.3 | |
| | | | | | | | | |
| | Average Length | | 1.7 | 3.4 | 5.0 | 6.0 | | |
| | Standard Deviation | | 0.14 | 0.32 | 0.39 | | | |
| | Yr. Classes Averaged | | 3 | 3 | 2 | 1 | | |

| Largemouth bass | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 0.8 | 2002 | 3 | 3.5 | | | | | |
| | 2001 | 3 | 3.0 | 6.5 | | | | |
| | 2000 | 1 | 2.2 | 4.8 | 7.5 | | | |
| | 1999 | 3 | 3.8 | 7.0 | 9.6 | 11.5 | | |
| | 1998 | 2 | 3.4 | 6.7 | 9.2 | 11.1 | 12.7 | |
| | 1997 | 1 | 3.4 | 7.6 | 10.2 | 12.6 | 14.2 | 15.8 |
| | | | | | | | | |
| | Average Length | | 3.4 | 6.7 | 9.6 | 11.5 | | |
| | Standard Deviation | | 0.38 | 0.38 | | | | |
| | Yr. Classes Averaged | | 3 | 2 | 1 | 1 | | |

# Kankakee River Game Fish Growth - 2003, cont'd.

| Walleye | Year Class | Number Aged | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| Intercept = 2.2 | | | | | | | | |
| | 2001 | 4 | 9.2 | 14.1 | | | | |
| | 2000 | 1 | 10.9 | 15.1 | 16.4 | | | |
| | | | | | | | | |
| | Average Length | | 9.2 | 14.1 | | | | |
| | Standard Deviation | | | | | | | |
| | Yr. Classes Averaged | | 1 | 1 | | | | |

# Kankakee River Game Fish Growth - 2004

| Smallmouth bass | Year | Number | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI |
| Intercept = 1.4 | 2003 | 6 | 3.0 | | | | | |
| | 2002 | 7 | 3.5 | 6.1 | | | | |
| | 2001 | 7 | 3.6 | 6.7 | 9.4 | | | |
| | 2000 | 2 | 3.8 | 7.3 | 11.2 | 13.9 | | |
| | Average Length | | 3.4 | 6.4 | 9.4 | | | |
| | Standard Deviation | | 0.35 | 0.40 | | | | |
| | Yr. Classes Averaged | | 3 | 2 | 1 | | | |

| Walleye | Year | Number | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI |
| Intercept = 2.2 | 2003 | 7 | 7.7 | | | | | |
| | 2002 | 1 | 8.9 | 13.1 | | | | |
| | Average Length | | 7.7 | | | | | |
| | Standard Deviation | | | | | | | |
| | Yr. Classes Averaged | | 1 | | | | | |

| Largemouth bass | Year | Number | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI |
| Intercept = 0.8 | 2003 | 7 | 4.0 | | | | | |
| | 2002 | 1 | 4.0 | 8.0 | | | | |
| | 2001 | 5 | 3.7 | 7.3 | 10.3 | | | |
| | 2000 | 5 | 4.1 | 7.6 | 10.1 | 12.5 | | |
| | 1999 | 5 | 3.4 | 7.1 | 9.9 | 12.0 | 14.0 | |
| | Average Length | | 3.8 | 7.3 | 10.1 | 12.2 | 14.0 | |
| | Standard Deviation | | 0.33 | 0.27 | 0.18 | 0.36 | | |
| | Yr. Classes Averaged | | 4 | 3 | 3 | 2 | 1 | |

| Rock bass | Year | Number | Back Calculated Length(inches)at Each Age | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Class | Aged | I | II | III | IV | V | VI |
| Intercept = 1.0 | | | | | | | | |
| | 2002 | 3 | 1.8 | 3.2 | | | | |
| | 2001 | 4 | 1.8 | 3.5 | 5.6 | | | |
| | 2000 | 4 | 1.8 | 3.5 | 5.7 | 6.8 | | |
| | Average Length | | 1.8 | 3.4 | 5.6 | 6.8 | | |
| | Standard Deviation | | 0.01 | 0.15 | 0.06 | | | |
| | Yr. Classes Averaged | | 3 | 3 | 2 | 1 | | |